

FIG 1D

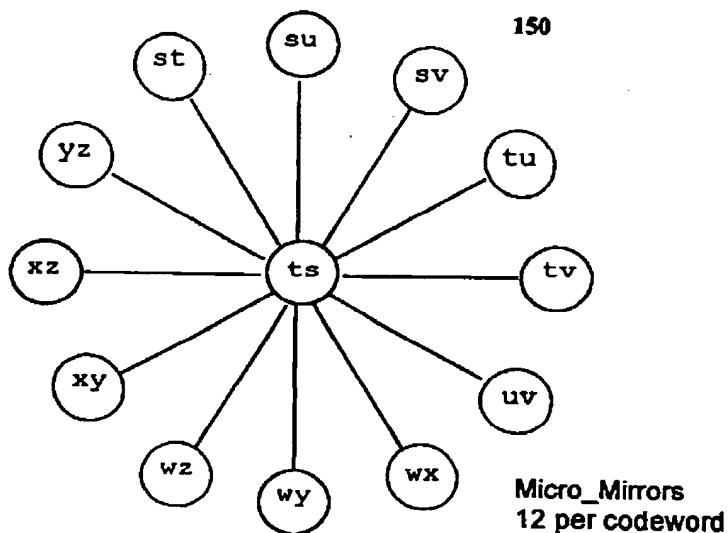
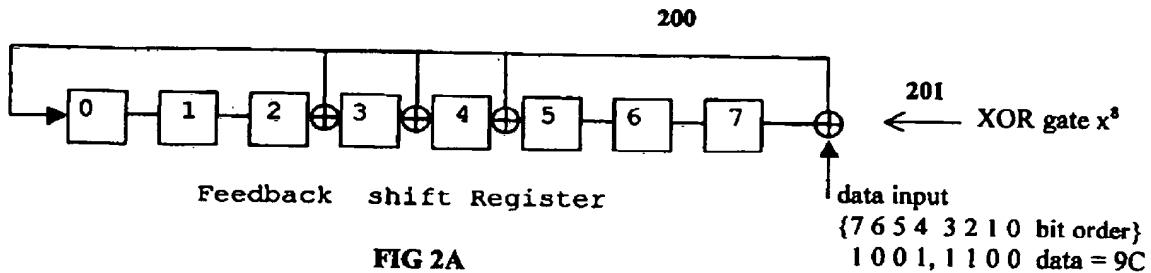


FIG 1E



0	0	0	0	0	0	0	0	results after 1 shift
1	0	0	1	1	1	0	0	results after 2 shifts
0	1	0	0	1	1	1	0	results after 3 shifts
0	0	1	0	0	1	1	1	results after 4 shifts
0	0	0	1	0	0	1	1	results after 5 shifts
0	0	0	0	1	0	0	1	results after 6 shifts
0	0	0	0	0	1	0	0	results after 7 shifts
0	0	0	0	0	0	1	0	results after 8 shifts,
0	0	0	0	0	0	0	1	ECC = 80

FIG 2B

210

$$e0 = d0 + d3 + d4 + d5 + d6$$

$$e1 = d1 + d4 + d5 + d6 + d7$$

$$e2 = d2 + d5 + d6 + d7$$

$$e3 = d0 + d4 + d5 + d7$$

$$e4 = d0 + d1 + d3 + d4$$

$$e5 = d0 + d1 + d2 + d3 + d6$$

$$e6 = d1 + d2 + d3 + d4 + d7$$

$$e7 = d2 + d3 + d4 + d5$$

per example

$$0 + 1 + 1 + 0 + 0 = 0$$

$$0 + 1 + 0 + 0 + 1 = 0$$

$$1 + 0 + 0 + 1 = 0$$

$$0 + 1 + 0 + 1 = 0$$

$$0 + 0 + 1 + 1 = 0$$

$$0 + 0 + 1 + 1 + 0 = 0$$

$$0 + 1 + 1 + 1 + 1 = 0$$

$$1 + 1 + 1 + 0 = 1$$

ECC = 80 for data byte 9C

FIG 2C

220

$$d0 = e2 + e3 + e4 + e5$$

$$d1 = e0 + e3 + e4 + e5 + e6$$

$$d2 = e1 + e4 + e5 + e6 + e7$$

$$d3 = e3 + e4 + e6 + e7$$

$$d4 = e0 + e2 + e3 + e7$$

$$d5 = e0 + e1 + e2 + e5$$

$$d6 = e0 + e1 + e2 + e3 + e6$$

$$d7 = e1 + e2 + e3 + e4 + e7$$

per example

$$0 + 0 + 0 + 0 = 0$$

$$0 + 0 + 0 + 0 + 0 = 0$$

$$0 + 0 + 0 + 0 + 1 = 1$$

$$0 + 0 + 0 + 1 = 1$$

$$0 + 0 + 0 + 1 = 1$$

$$0 + 0 + 0 + 0 = 0$$

$$0 + 0 + 0 + 0 + 0 = 0$$

$$0 + 0 + 0 + 0 + 1 = 1$$

data byte = 9C for ECC = 80

FIG 2D

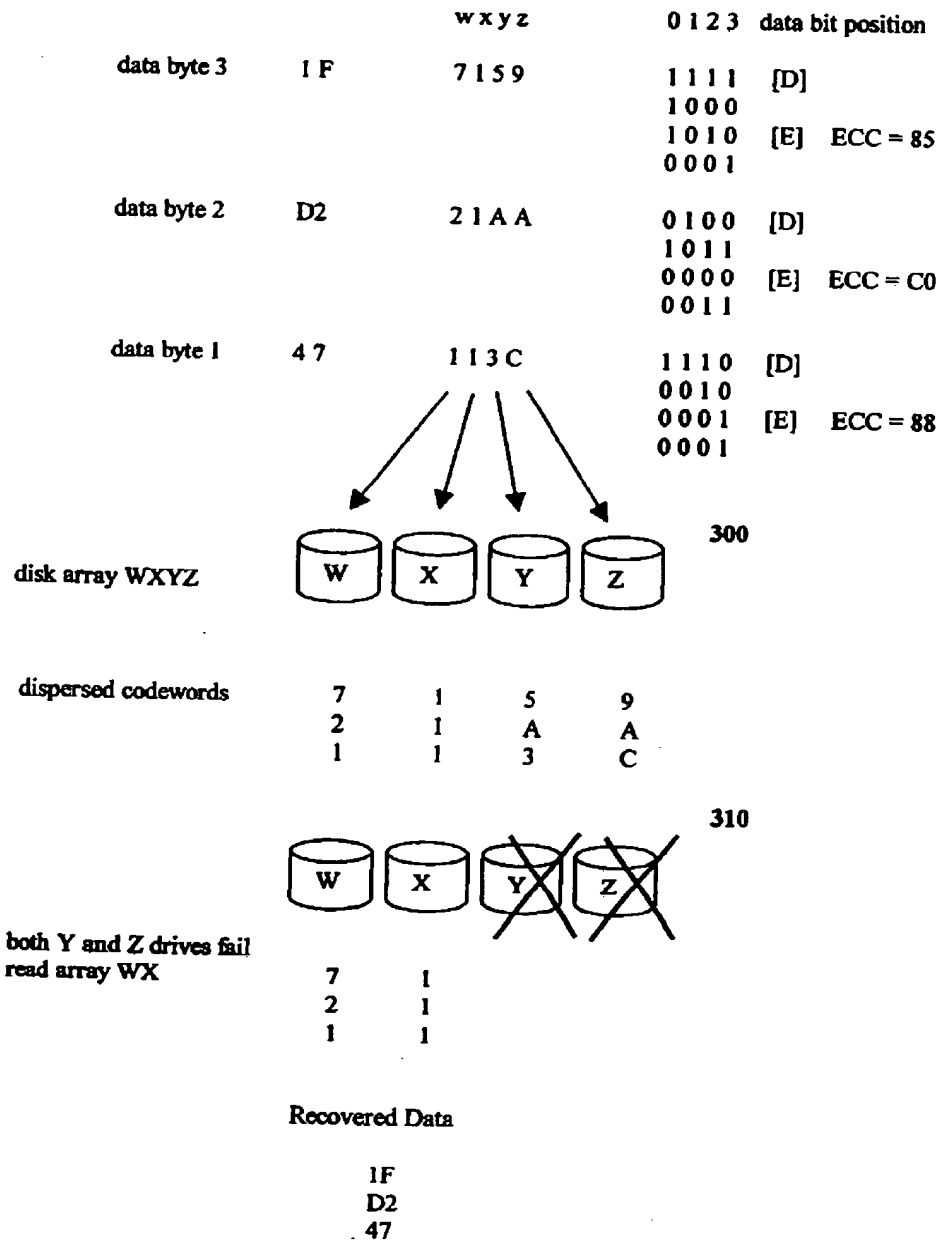


FIG 3

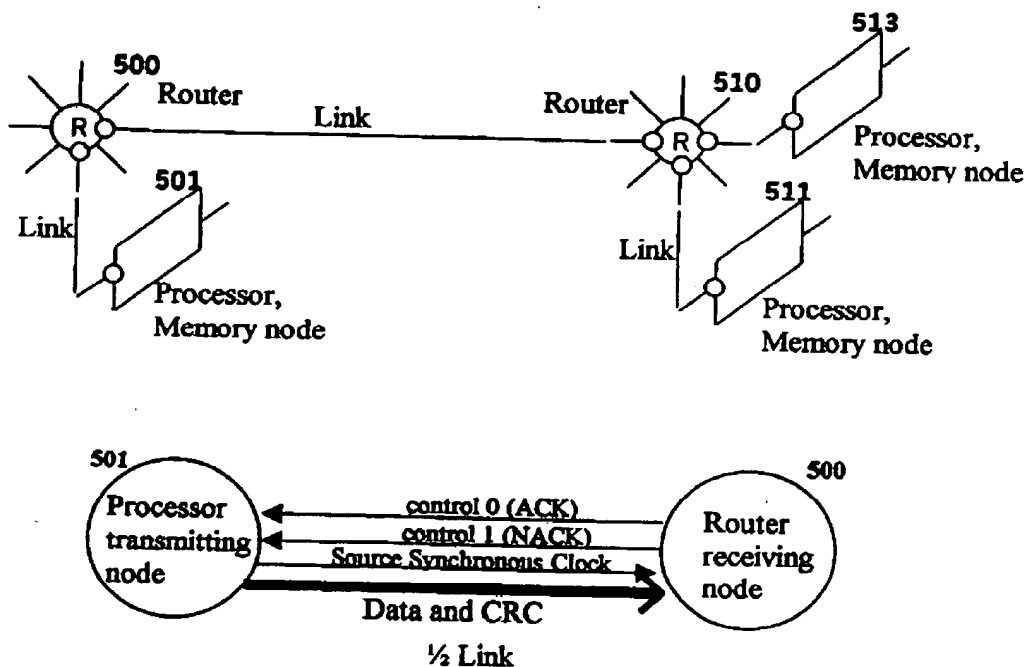


FIG 5

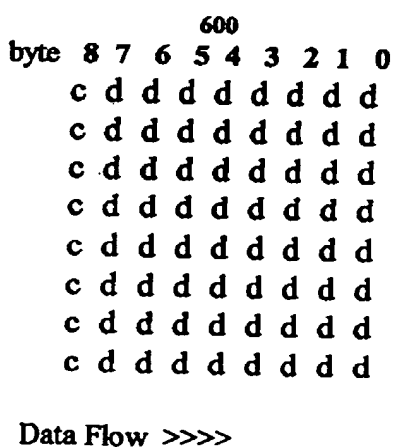


FIG 6A

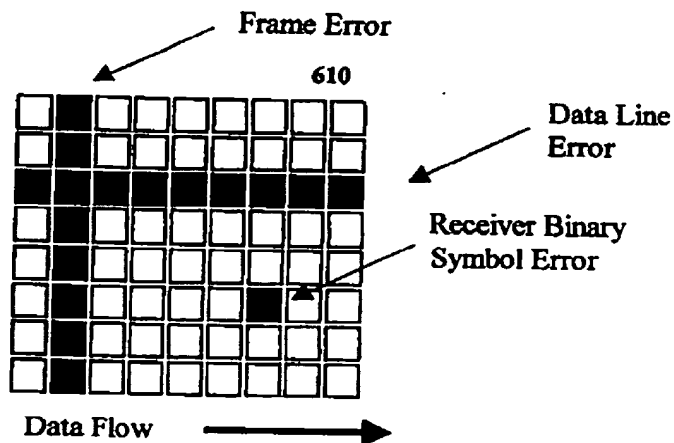


FIG 6B

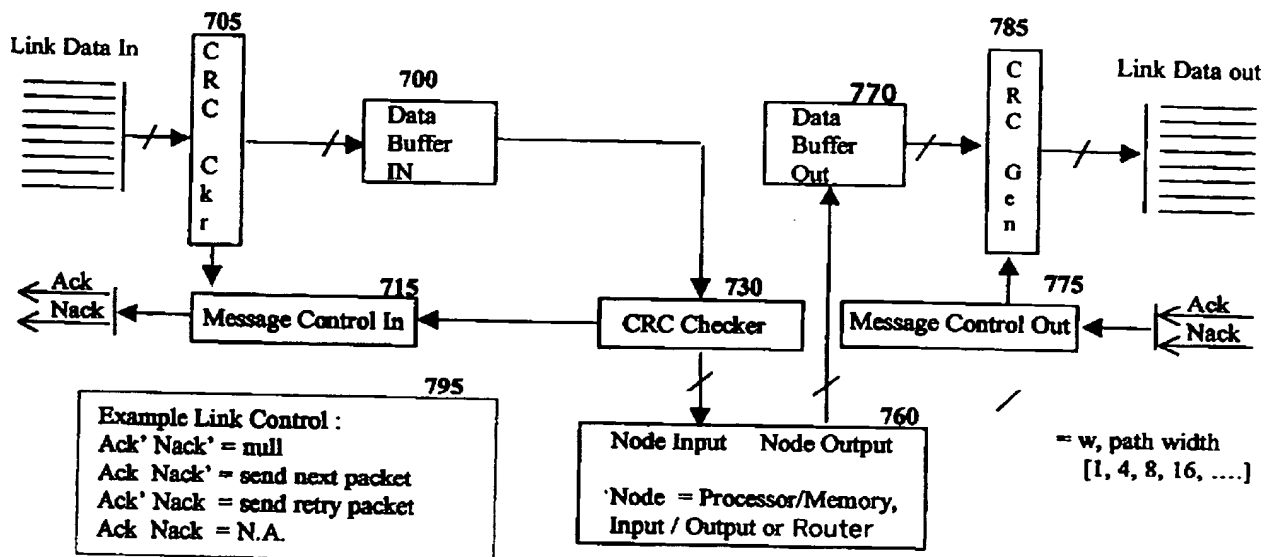


FIG 7

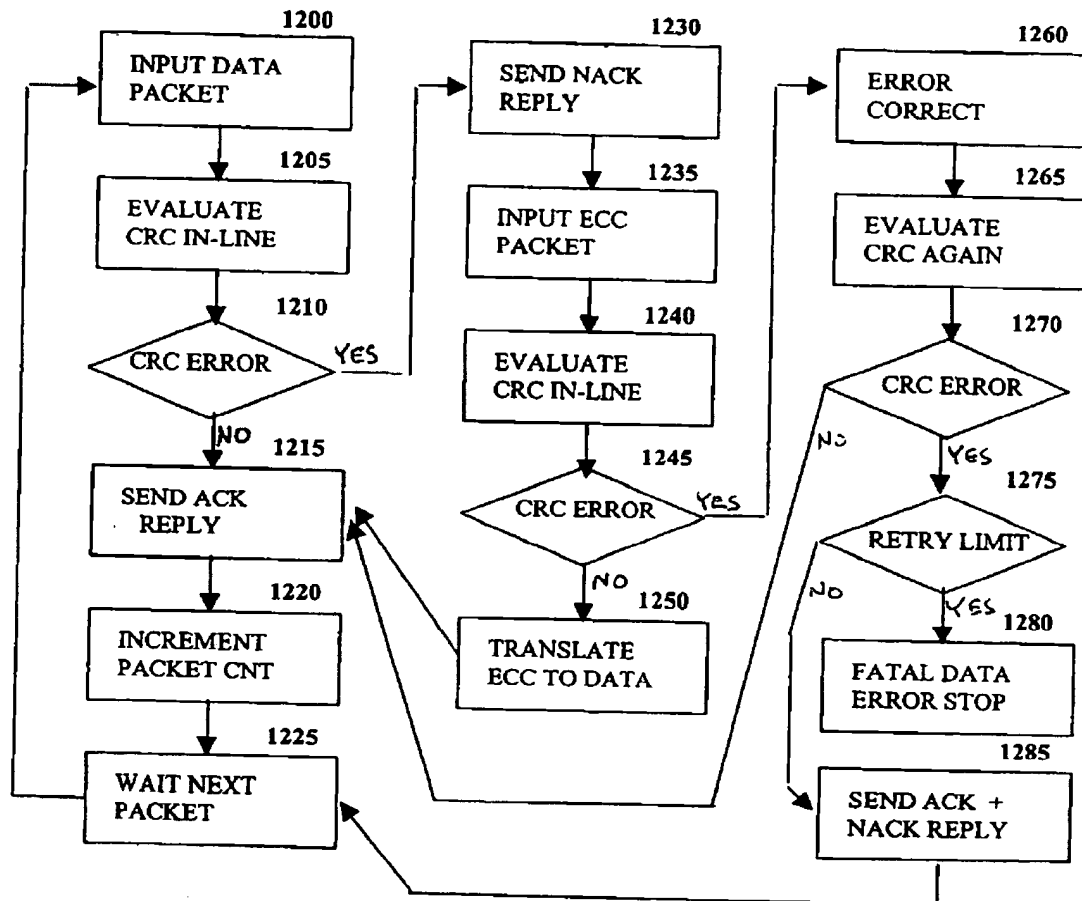


FIG 12

[E]	1301	[D]	1300
c6uc2u u30 u26 u22 u18 u14 u10 u06 u02		c4sc0s s28 s24 s20 s16 s12 s08 s04 s00	
c6vc2v v30 v26 v22 v18 v14 v10 v06 v02		c4tc0t t28 t24 t20 t16 t12 t08 t04 t00	
c7uc3u u31 u27 u23 u19 u15 u11 u07 u03		c5sc1s s29 s25 s21 s17 s13 s09 s05 s01	
c7vc3v v31 v27 v23 v19 v15 v11 v07 v03		c5tc1t t29 t25 t21 t17 t13 t09 t05 t01	
c4uc0u u28 u24 u20 u16 u12 u08 u04 u00		c6sc2s s30 s26 s22 s18 s14 s10 s06 s02	
c4vc0v v28 v24 v20 v16 v12 v08 v04 v00		c6tc2t t30 t26 t22 t18 t14 t10 t06 t02	
c5uc1u u29 u25 u21 u17 u13 u09 u05 u01		c7sc3s s31 s27 s23 s19 s15 s11 s07 s03	
c5vc1v v29 v25 v21 v17 v13 v09 v05 v01		c7tc3t t31 t27 t23 t19 t15 t11 t07 t03	

Data Flow >>>

<<< NACK

<<< ACK

FIG 13

[E]	1401	[D]	1400
c6uc2u u30 u26 u22 u18 u14 u10 u06 u02		c4sc0s s28 s24 s20 s16 s12 s08 s04 s00	
c6vc2v v30 v26 v22 v18 v14 v10 v06 v02		c4tc0t t28 t24 t20 t16 t12 t08 t04 t00	
c7uc3u u31 u27 u23 u19 u15 u11 u07 u03		c5sc1s s29 s25 s21 s17 s13 s09 s05 s01	
c7vc3v v31 v27 v23 v19 v15 v11 v07 v03		c5tc1t t29 t25 t21 t17 t13 t09 t05 t01	
c4uc0u u28 u24 u20 u16 u12 u08 u04 u00		c6sc2s s30 s26 s22 s18 s14 s10 s06 s02	
c4vc0v v28 v24 v20 v16 v12 v08 v04 v00		c6tc2t t30 t26 t22 t18 t14 t10 t06 t02	
c5uc1u u29 u25 u21 u17 u13 u09 u05 u01		c7sc3s s31 s27 s23 s19 s15 s11 s07 s03	
c5vc1v v29 v25 v21 v17 v13 v09 v05 v01		c7tc3t t31 t27 t23 t19 t15 t11 t07 t03	

Data Flow >>>

<<< NACK

<<< ACK

FIG 14

Begin with Byte 00

Transmitted

s00t00 = 18h (data = ts = 81h)

u00v00 = 77h (ECC = vu = 77h)

Received

s00t00 = 1Ah (data = ts = A1h)

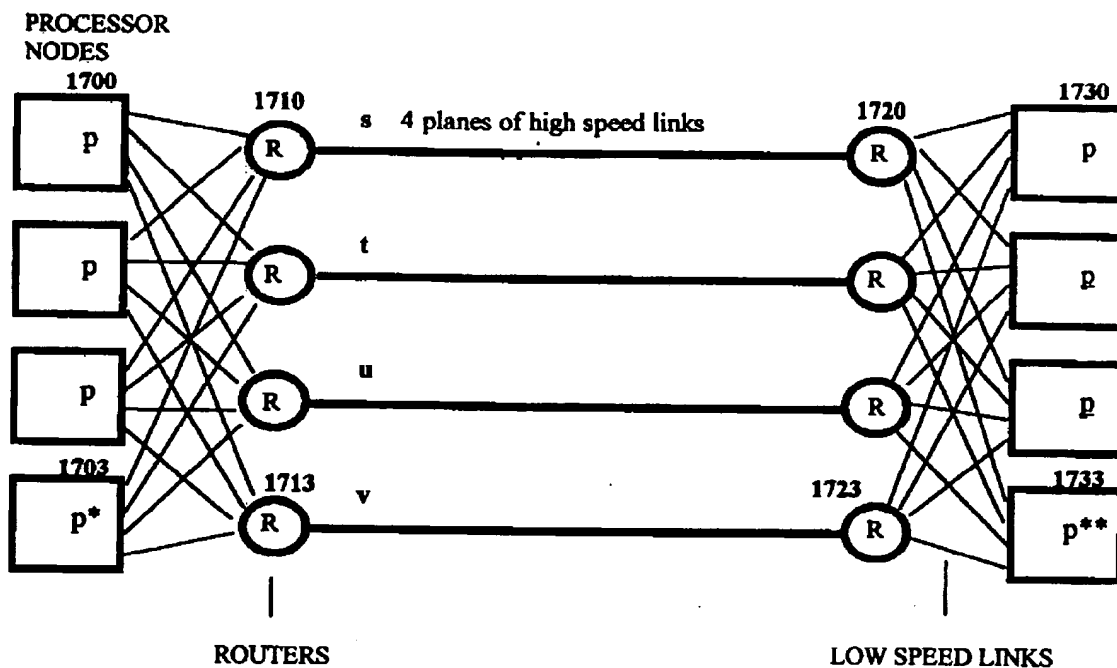
u00v00 = 75h (ECC = vu = 57h)

So correction proceeds exactly as before in Figure 8 for byte 00.

All 32 bytes are assembled and corrected then verified via the CRC checkcode comparison.

	<u>ECC</u>	<u>Data</u>
Data byte 00 input in error is		1 0 1 0 0 0 0 1 = A1 hex.
The ECC for A1 is F8	1 1 1 1 1 0 0 0 = F8 hex.	
ECC byte 00 input in error is	0 1 0 1 0 1 1 1 = 57 hex.	
The ECC syndrome	1 0 1 0 1 1 1 1 = AF hex.	
E.P. from Table 1 = d5 & e5	0 0 1 0 0 0 0 0 = e5	and 0 0 1 0 0 0 0 0 = d5
After corrections data = 81 hex.	0 1 1 1 0 1 1 1 = 77 hex.	and 1 0 0 0 0 0 0 1 = 81 hex.

FIG 14A



$$[D_1] \quad d^0 d^1 d^2 d^3 d^4 d^5 d^6 d^7 \\ = st$$

$$[E_1] \quad e^0 e^1 e^2 e^3 e^4 e^5 e^6 e^7 \\ = uv$$

data encoded
with ECC

$$d^0 d^1 d^2 d^3 \quad s$$

$$d^4 d^5 d^6 d^7 \quad t$$

$$e^0 e^1 e^2 e^3 \quad u$$

$$e^4 e^5 e^6 e^7 \quad v$$

data dispersed
across 4 planes

$$\begin{array}{l} su \\ sv \quad st \quad st = [D_1] \\ tu \quad uv \\ tv \\ uv \end{array}$$

data assembly
and recovery data verification
and correction

FIG 17